

Correspondence

Lead specificity of the maximum ST/heart rate slope response

Sir,

The letter by Beattie *et al* (1984; 53: 349) contains some interesting and remarkable statements, and a few are worthy of comment. The letter states that "the maximum rate of change of ST amplitude was a poor predictor of the extent of coronary artery disease" when using "a computerised Frank orthogonal lead system." This finding is hardly surprising; though the full details of the protocols have not been stated, it seems that this report is yet another that has used methods different from those used in the Leeds test and obtained different results. In Leeds the ST/HR slope, using conventional leads plus lead CM5, gives results after manual measurement that are still consistent with our initial experience; the maximal ST/HR slope is an accurate index of the presence and severity of myocardial ischaemia, which in the patients with anginal pain is assessed and graded according to results of coronary arteriography.

A remarkable feature of the letter on the use of the maximal ST/HR slope is the suggestion that this "assumes that the ST response to exercise is uniform in all leads and that a common pathophysiological mechanism—namely a mismatch of myocardial

oxygen supply and demand—is the sole determinant of such a response." Then the letter proceeds to destroy its own suggestion, using the well accepted contention that electrocardiographic changes are influenced by the region of the myocardium in which ischaemia occurs.

Perhaps we might be allowed to state that in our use of the maximal ST/HR slope there is no need for any assumptions to be made; but there are implications of the results. Also our up to date experience with the maximal ST/HR slope is that this slope is an index of myocardial ischaemia; it is still accurate in detecting the ischaemia as assessed by coronary angiography in a selected group of patients with angina, but it seems also in ongoing trials to be an index of myocardial ischaemia in patients without coronary constriction, for example, in patients with a dilated or hypertrophied left ventricle.

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Radiographic contrast agents in angiocardiology

Sir,

Hayward and Dawson are to be congratulated on their excellent review of radiographic contrast agents in angiocardiology (1984; 52: 361-8). Their statement that "the viscosities of the new agents are all appreciably higher than those of conventional agents" is, however, at variance with their Table, which says that Niopam 370 is less viscous than Urografin 370 at 37°C. It is my impression that higher viscosity limits the delivery of contrast medium during hand injections, as for coronary angiography, but that for really high rates of delivery the degree of turbulence of flow in the catheter is more important. This means that for pump injections the length and internal diameter of the catheter are more critical to delivery than the viscosity of the contrast medium.

At present, most cardiac investigations are per-

formed without serious side effects using ionic media. The routine use of these expensive newer media can be justified only in certain subgroups of patients—for example, in pulmonary angiography, paediatric angiocardiology, and in combined coronary/carotid examinations. The new media should be made available in every department for occasional use in high risk adult patients. On occasions, however, it may become apparent during a procedure that the patient is showing adverse haemodynamic or electrocardiographic responses to an ionic medium, and it would be an advantage to be able to change to a low osmolality medium during such a procedure. I and my colleagues at this hospital have studied a number of patients for whom a change was made from ionic to another medium. In a series of 100 patients in whom iopamidol (Niopam) was given for the left ven-

triculogram, after coronary angiography with Urografin 370, three patients experienced some degree of nausea, no patient vomited or retched, and there was no incidence of any haemodynamic deterioration. We have concluded that iopamidol may be safely substituted for Urografin 370 during a procedure.

The findings compare with our other series in which the same sequence using Hexabrix instead of iopamidol resulted in a 7.8% incidence of nausea and a 6.7% incidence of vomiting.¹

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Reference

- 1 Partridge JB. Patient tolerance to sequential administration of Urografin and Hexabrix [Letter]. *Br J Radiol* 1985; 58: 272.

This letter was shown to the authors, who reply as follows:

Sir,
We are grateful to Dr Partridge for his comments, with which we are in complete agreement. When discussing viscosity in our paper we sought to make the point that at equal iodine concentrations the new agents have significantly higher viscosities than the generality of conventional contrast agents. In the par-

ticular specific case of Niopam 370 and Urografin 370, however, Dr Partridge quite correctly points out that there is practically no viscosity difference, as indeed our Table shows.

Our department adopts Dr Partridge's approach of using a new contrast agent only in selected patients in all radiological procedures requiring an intravascular contrast agent, and it is our impression that most other departments in the United Kingdom adopt this sensible approach. Grainger has made a useful summary of criteria for the selection of such patients.¹ As for cardiac radiology in particular, most practitioners in the United Kingdom appear to take the reasonable view that, in good hands, the incidence of serious complications is low and that, though they undoubtedly have strong theoretical advantages, the general use of the new agents is at the moment unjustified on economic grounds. While savings should be made wherever possible without detrimental effect on patients it is pertinent to make the point that the cost of the contrast material, old or new, is only a very small proportion of the total cost of a cardiac study.

Peter Dawson,
Roger Hayward,
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Reference

- 1 Grainger RG. The clinical and financial implications of the low osmolar radiological contrast media [Letter]. *Clinical Radiology* 1984; 35: 251-2.

Notices

Management of cardiac arrhythmias

An international conference on the management of cardiac arrhythmias organised by the British Heart Foundation will be held in London from 2 to 4 September 1987. Further details may be obtained from the Organising Committee, British Heart Foundation, 102 Gloucester Place, London W1H 4DH.

Travelling fellowship

The Royal College of Physicians and the British Cardiac Society have created a travelling fellowship to enable a senior cardiologist from abroad to visit this country for a few weeks. The chief purpose of this fellowship is to provide the opportunity for contact with specialist colleagues and societies that may not be

available in the fellow's own country; it is restricted to physicians from the Third World. The first holder of the fellowship is Dr Waldo Fernandez, associate professor of medicine in the Universidad San Marcos, Lima, Peru. He spent six weeks in March and April visiting centres in London, Oxford, Cambridge, and Birmingham where he attended the Spring Meeting of the British Cardiac Society.

British Cardiac Society

The Autumn Meeting will be held at the Wembley Conference Centre, London, on 26 to 28 November 1985, and the closing date for receipt of abstracts will be 1 August 1985.

The Annual General Meeting for 1986 will take place in York on 2 and 3 April 1986, and the closing date for receipt of abstracts will be 2 January 1986.